

Application No.: 09/940,324  
Amendment dated: July 20, 2005  
Reply to Office Action dated: April 20, 2005

**AMENDMENTS TO THE CLAIMS**

1. (Previously Presented) A cache-coherent input/output device comprising:  
a plurality of client ports, each to be coupled to one of a plurality of port components;  
a plurality of sub-unit caches, each coupled to one of said plurality of client ports and  
assigned to one of said plurality of port components; and  
a coherency engine coupled to said plurality of sub-unit caches.
2. (Original) The device of claim 1 wherein said plurality of port components include  
processor port components.
3. (Original) The device of claim 1 wherein said plurality of port components include  
input/output components.
4. (Original) The device of claim 3 wherein said plurality of sub-unit caches include  
transaction buffers using a coherency logic protocol.
5. (Original) The device of claim 4 wherein said coherency logic protocol includes a  
Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.

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6. (Previously Presented) A processing system comprising:
  - a processor;
  - a plurality of port components; and
  - a cache-coherent input/output device coupled to said processor and including a plurality of client ports, each coupled to one of said plurality of port components, said cache-coherent device further including a plurality of caches, each coupled to one of said plurality of client ports and assigned to one of said plurality of port components, and a coherency engine coupled to said plurality of caches.
7. (Original) The processing system of claim 6 wherein said plurality of port components include processor port components.
8. (Original) The processing system of claim 6 wherein said plurality of port components include input/output components.
9. (Currently Amended) ~~In a cache-coherent input/output device including a coherency engine and a plurality of client ports a method for processing a transaction, comprising: A method comprising:~~

receiving a transaction request at one of [[a]] said plurality of client ports on [[the]] a input/output cache-coherent device, said transaction request includes an address; and

determining whether said address is present in one of a plurality of sub-unit caches, each of said sub-unit caches assigned to said one of said plurality of client ports.

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10. (Original) The method of claim 9 wherein said transaction request is a read transaction request.

11. (Original) The method of claim 10 further comprising:

transmitting data for said read transaction request from said one of said plurality of sub-unit caches to one of said plurality of client ports.

12. (Original) The method of claim 11 further comprising:

prefetching one or more cache lines ahead of said read transaction request; and  
updating the coherency state information in said plurality of sub-unit caches.

13. (Original) The method of claim 12 wherein the coherency state information includes a Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.

14. (Original) The method of claim 9 wherein said transaction request is a write transaction request.

15. (Original) The method of claim 14 further comprising:

modifying coherency state information for a cache line in said one of said plurality of sub-unit caches;  
updating coherency state information in others of said plurality of sub-unit caches by said coherency engine; and

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transmitting data for said write transaction request from said one of said plurality of sub-unit caches to memory.

16. (Original) The method of claim 15 further comprising:

modifying coherency state information of said write transaction request in the order received; and

pipelining multiple write requests.

17. (Original) The method of claim 16 wherein the coherency state information includes a Modified-Exclusive-Shared-Invalid (MESI) cache coherency protocol.